Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of		
Use of 1675 – 1710 MHz Band	)	ET Docket No. 10-123

Ref. DA 11-444

To: Chief, Wireless Telecommunications Bureau
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SPECTRUM TASK FORCE REQUESTS INFORMATION ON FREQUENCY BANDS IDENTIFIED BY NTIA AS POTENTIAL BROADBAND SPECTRUM
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COMMENTS OF BOLLORE TELECOM

Bolloré telecom hereby respectfully submits its comments in response to the Spectrum task force's information request issued by the Commission in the above-captioned proceedings.

Although Bolloré telecom is not directly concerned with the object of the current public notice, we still value the opportunity to humbly provide the FCC with our European point of view on spectrum needs for next-generation buildouts. Bolloré telecom owns radio spectrum in the 3.4-3.6 GHz band in France, and wishes to provide 4G voice and data services nationwide in this country. We are answering today because we believe the exponential growth in mobile data trafic makes it imperative (i) additional spectrum be allocated for mobile broadband and (ii) such allocation should be made with a strong focus on US-Europe harmonization.

How do the technical assumptions upon which NTIA based its analyses affect how broadband services could be deployed in each band?
We believe the 3.4-3.8 GHz frequency band presents an opportunity to address the enormous needs in wireless broadband, for the United States as well as for Europe. The European Commission has already decided to harmonize this band for BWA[1] and is working on a new band plan for IMT[2], following the inclusion of the sub-band 3.4-3.6 GHz as an IMT band in the WRC'07. We strongly believe a US-Europe harmonization would benefit both American and European industries and consumers. As the NTIA and the FCC know, WiMAX equipment has already been developed for the band. It should also be noted that the bands 3400-3600 MHz- known as band 42 by 3GPP - and 3600-3800 MHz- known as band 43 -are now part of the bands included in the LTE specifications. The TDD part is nearly complete for both bands and the 2x80 MHz FDD arrangement will be completed in June of this year for the 3.4-3.6 GHz sub-band[3]. According to several chipset makers and vendors, devices supporting 3.4-3.8 GHz TDD can realistically be made available in the near future. Therefore, there is a great potential regarding device ecosystem harmonization in TDD.

How do the conditions placed on the bands (e.g., exclusion zones) affect their usefulness for broadband deployment?
We believe that the proposed exclusion zones for the 3.5 GHz band are very extensive and are likely to impair the success of the band in the US, since the most densely populated areas are concerned by those exclusion zones and this band will most likely be used for IMT-A in densely populated areas. We certainly

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[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:144:0077:0081:EN:PDF

[2] http://apps.ero.dk/eccwp/WI_DETAIL.ASPX?wiid=212

[3] http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_51/Docs/RP-110056.zip

appreciate the existence of legacy systems that still need to be protected, however we believe that other solutions could be proposed in order to enforce this protection while keeping the usefulness of the band, like defining a proper EIRP limit in those zones, so that micro / pico / femtocell deployments are still possible. This could apply both for the restriction on the coast, and for the exclusion zones around satellite earth station. This would of course still limit the usefulness of the band but it could still allow operators to offload data traffic from other bands while enforcing the success of a global harmonized ecosystem**.** Regarding the case where WiMAX/LTE is the victim of interference rather than the aggressor, we estimate that lowering the price of the spectrum is a better option than completely closing it, since it is likely that the 3.5 GHz band will in most cases still be usable thanks to the various error mitigation techniques implemented in the WiMAX and LTE technologies such as FEC, adaptive modulation, ARQ/HARQ, frequency hopping in wide channel bandwidth and diversity.

What types of broadband technologies could be deployed in these bands and is equipment readily available? Does this equipment meet the technical assumptions in NTIA's analyses? If not, how would the use of different technologies affect the availability of each band for broadband use?
WiMAX terminals are already available in the 3.4-3.6 GHz band. This is currently mostly limited to Customer Premises Equipment (CPE) and dongle-like terminals, but chipsets being mature enough, more sophisticated terminals such as handsets can quickly be developed to follow market demand. We estimate that the first TD-LTE devices will appear during mid-2012. In the longer term, multi-band terminals and handsets will implement the 3.4-3.8 bands since those are the main candidates for IMT-A in Europe.

Will future broadband services require paired spectrum bands and, if so, what are the most suitable band pairings for the spectrum identified by NTIA? If the spectrum identified by NTIA is not paired, what broadband technologies might be deployed?
As a matter of fact, TDD allows a configurable asymmetry between downlink and uplink and is thereby more suitable for data deployments. Smartphone data consumption patterns already show a strong asymmetry: according to Microsoft[4] for instance, the average smartphone user currently uses 6 times more downlink traffic than uplink traffic. We believe that, in the future, the asymmetry will keep growing in favour of downlink. According to Cisco[5], by 2014, ⅔ of mobile traffic will be from video; as a consequence of that, we estimate the downlink traffic will grow from 5 to 8 times over the 2009-2014 period. The data traffic from laptops and tablets is also exponentially growing, with a lot of stress on the downlink. We believe that FDD is unable to properly handle such an asymetry: looking at the projected spectral efficiencies of FDD-LTE in downlink and uplink from report TR 25.912[6], it can be shown that the maximum DL:UL capacity asymetry would be around 3:1 - far less than the projected needs - and would therefore be sub-optimal for the current and foreseen usages. Whatever the future will be, the main benefit from TDD is to allow for a configurable DL:UL ratio, and therefore being able to guarantee the proper utilization of the spectral resource.
Regarding harmonization, WiMAX 802.16e is only available in TDD with no plans for FDD, and therefore all current 3.5 GHz BWA usages in Europe are TDD. The LTE specification is currently ready for the TDD part and will be ready soon for the FDD part in 3.4-3.6 GHz. Yet, we believe that the proposed 3550-3650 MHz band for the US is too narrow to be suitable for paired allocations. Moreover, should this be done, the arrangement would not be compatible with the band plans currently discussed for Europe at ECC-PT1: the current consensus in ECC-PT1 is to advocate for TDD in the 3.6-3.8 GHz sub-band - i.e. band 43 - in order to better circumvent existing satellite allocations; as for band 42, TDD is the preferred option in the current state of the discussions. In any case, there is now a consensus not to mix TDD and FDD in the same band.
We strongly encourage not to go for flexible paired arrangements since TDD/FDD coexistence can be difficult to solve or require very stringent filters and can incur significant spectrum losses in guard bands. Therefore, we believe that a 100% TDD unpaired arrangement in the 3550-3650 band would be more suitable for global roaming with Europe and should be considered as the preferred option.

Could broadband services share use of each band with Federal users and what techniques would be most effective for sharing (e.g., coordination in time, geography, or policy, and / or the use of cognitive

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[4] http://research.microsoft.com/en-us/um/people/ratul/papers/imc2010-smartphone-traffic.pdf

[5] http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf

[6] see tables 13.4j & 13.4i

technologies)? If sharing would not be feasible, what process should be used to relocate or phase out incumbent users (both Federal and non-Federal) and what are candidate relocation frequency bands?
Cognitive technologies may not be mature enough to be mandatory and coordination in geography leads to undesirable extensive exclusion zones. Again - considering IMT systems are the aggressor - we believe that defining proper restrictions on EIRP could enable the use of the band in those exclusion zones (e.g. for data offloading in dense urban areas where there is a lack of capacity) while still protecting existing systems. In places other than those zones, macrocell deployments should of course be allowed, possibly in a wider band than 3550-3650. We strongly encourage the US and European administrations to help the migration of legacy systems to newer bands in order to enable operators to adapt to the exponential growth of the capacity demand and uses as acknowledge worldwide.